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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,408	03/02/2001	Akhtar Osman	MO6259PS1046	8317

157 7590 12/06/2002

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EXAMINER

LU, C CAIXIA

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 12/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/786,408

Applicant(s)

OSMAN ET AL.

Examiner

Caixia Lu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-64 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 33-64 is/are rejected.
- 7) ☒ Claim(s) 63 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required:

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

The limitation of "a low level of gel content" is indefinite because the term "low" is a relative term and Applicant has failed to provide the metes and bounds of "a low level of gel content".

Claims 39 and 41

It is incorrect to defined a saturated hydrocarbon as "aromatic hydrocarbon" and "monoolefinic hydrocarbon" because those are not saturated hydrocarbons.

Claim 46

The limitation of "C₂-C₁₈ non-conjugated dienes" is erroneous because a non-conjugated diene requires at least ~~five~~ carbons in the molecular.

three

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Claim 57

The "0%" lower end of the limitation of R₃Al lacks antecedence because Claim 55, from which Claim 57 dependent upon, requires component (b) R₃Al to be more than 0% in order to have a mixture of (a) and (b).

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 33-40, 44, and 48-54 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matsuda et al. (US 5,109,082).

4-303
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The instant claims are directed to a process for the preparation of cis-1,4-
polybutadiene in the presence of a catalyst ^{and} a polymerization diluent wherein the diluent
comprises an organic solvent and water particles having a median particle size less than
or equal to about 10 µm.

Matsuda teach a process for producing cis-1,4-polybutadiene in the presence of a catalyst comprising a halogen containing organoaluminum, a transition metal compound and water, wherein the water is introduced to the polymerization media by passing the water through a porous filter having a pore diameter of 5 μm or less (col. 1, line 65 to col. 2, line 6; col. 2, lines 14-31; col. 3, lines 4-13; and Example 1). Matsuda teaches all of the limitations of the instant claims except the size of water particle dispersed in the polymerization media.

Although the prior art Example 1 does not expressly teach the size of water particle dispersed in the solvent, Matsuda particularly teaches that the water is introduced to the polymerization media through a porous filter with a diameter of 5 microns or less and filter of 2 microns porous sized was used in the example. Therefore, a skilled artisan would have expected the size of the water particles dispersed in the organic solvent to be around about 2 to 5 microns.

Once a product appearing to be substantially identical is found and a 35 USC 102/103 rejection made, the burden of proof is shifted to the applicant to show an unobvious difference. In re Fitzgerald, 205 USPQ 594. In re Fessmann, 180 USPQ 324. Applicants have not met their burden to demonstrate an unobvious difference between the claimed product and the products of the prior art examples.

7. Claims 39-47, 55-62 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (US 5,109,082) in view of Tsujimoto et al. (US 5,905,125).

Matsuda's teaching is relied upon as shown above. Matsuda also teaches various aliphatic and cyclic aliphatic hydrocarbon solvents as the polymerization media and various of molecular weight modifiers such as olefin and nonconjugated dienes (col. 3, lines 4-20). However, Matsuda does not expressly teach a trialkyl aluminum component in the catalyst composition.

Tsujimoto teaches a process of produce a high cis 1,4-polybutadiene in the presence of a catalyst composition comprising (A) a cobalt compound, (B) a trialkyl aluminum compound, (C) an alkyl aluminum halide compound, and (D) water (col. 2, lines 16-61). Compare to the conventional catalyst system comprising only components (A), (C) and (D), the component (B) trialkyl aluminum provides the catalyst system with reduced gel formation and increased catalytic activity during polymerization.

Matsuda and Tsujimoto are analogous because they both are from the same area of endeavor of preparation of a high cis-1,4-polybutadiene in the presence of a catalyst composition comprising a cobalt compound, an organoaluminum compound, and water.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ Tsujimoto's trialkyl aluminum component and a molecular weight modifier to Matsuda's catalyst composition to provide a high cis-1,4-polybutadiene with reduced gel formation and desired molecular weight since such is within the scope of the teaching of the cited prior art and conventionally done in the art and in the absence of any showing of criticality and unexpected results.

Allowable Subject Matter


8. Claim 63 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The cited prior art does not teach or reasonably suggest using a sonic treatment to provide water particles having a median particle size of less than 10 microns.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (703) 306-3434. The examiner can normally be reached on 9:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1193.


Caixia Lu, Ph.D.
Examiner
November 26, 2002